# EXPLORING THE RELATIONSHIP BETWEEN INFORMATION CONTENT AND VISUAL CUES IN AN EMPLOYMENT INTERVIEW SETTING

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# EXPLORING THE RELATIONSHIP BETWEEN INFORMATION CONTENT AND VISUAL CUES IN AN EMPLOYMENT INTERVIEW SETTING

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Traditionally, interviewers have been instructed to attend to the verbal content of the interview while ignoring the potentially biasing visual cues presented. This study posits that information conveyed through both visual channels and verbal content channels are capable of representing job related attributes of an individual. Subjects participated in a hypothetical interview situation assuming to apply for a managerial position. The visual cues of smile, gaze, hand movement, body orientation and physical attractiveness were measured to represent the visual channel while transcriptions of interview content represented verbal content channels. Job related individual attributes of intelligence and personality were collected. Results suggest attributes of an individual have the potential to be conferred through both the verbal and visual channels in an interview setting. While the attribute of intelligence was found to be nonsignificant, the results suggest relevant job related personality dimensions of the individual may be conveyed through both information channels. This finding extends the understanding of the way in which interview information is conveyed and suggests that the information processing model may be expanded to include the utilization of both verbal and nonverbal channels in conveying applicant information.

# CHAPTER 1

# INTRODUCTION

The employment interview is the most widely used employment technique (e.g. Kinicki, Lockwood, Hom, & Griffeth, 1990; Zedeck, Tziner & Middlestadt, 1983). Industrial and organizational psychologists have been studying the employment interview for more than sixty years in an effort not only to determine the reliability and validity of judgements based on the interview, but also to discover the various psychological variables which influence these judgements.

Impressions drawn from interview observations tend to dominate hiring recommendations (Parsons & Liden, 1984; Kinicki & Lockwood, 1985; Rasa & Carpenter, 1987; Kinicki et al. , 1990). Parsons and Liden (1984) reported that the interview impressions of an applicant had a greater impact on interviewers' assessments of job qualifications than the applicant's prior work history, extracurricular activities or scholastic achievement. Kinicki and Lockwood (1985) determined that college recruiters formed opinions about students' job suitability primarily from trait attributions obtained through interviews than from past academic and work performance.

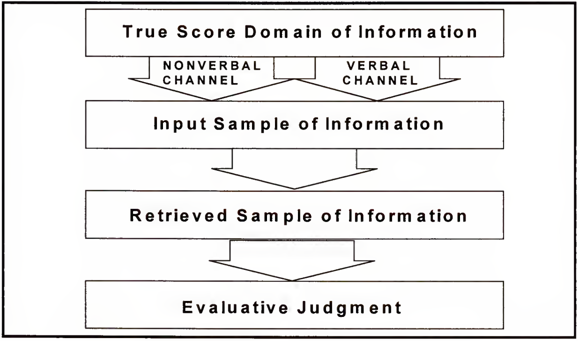
Likewise, Raza and Carpenter (1987) found that professional interviewer's perceptions of applicant attractiveness, skill, intelligence, and likability affected employment decisions more than the applicant's demographic features. Similarly, Graves and Powell (1988) demonstrated that professional interviewer's subjective impressions affected their hiring evaluations more than did objective credentials. And, Kinicki et al. (1990) found that trait impressions formed during interviews influenced managers' hiring decisions more than did resume facts. Thus, the interviewer's perceptions of the applicant ascertained by the interview appear to be a major factor in the employment decision.

## Information Processing

How evaluative judgments are made has been traditionally conceptualized as analogous to a "black box". Current perspectives (e.g., Ilgen & Feldman, 1983; Motowidlo, 1986; Northcraft, Neale, & Huber, 1988) have attempted to explain the information processing that occurs within this "black box."

A four-element information processing model was described by Motowidlo (1986). The true score domain was the first element. The true score domain was conceptualized as the total population of both positive and negative information available about the target stimulus. The second element was the input sample which was evaluative impressions of information from the true score domain that have actually been observed or experienced. The third element of the model was the retrieved sample of information in which evaluative impressions are recalled by the interviewer. The final element in the information processing model was the actual evaluative judgment made.

Figure 1


True Score Domain of Information
NONVERBAL CHANNEL
VERBAL CHANNEL
Input Sample of Information
Retrieved Sample of Information
Evaluative Judgment

The true score domain was posited to be a hypothetical domain of all the positive and negative informational items which could potentially be observed about the target stimulus. It was a hypothetical domain because its content could never be completely identified in real world experiences. This information could include indicators of an individual's knowledge, skills, abilities, personality, intelligence, and motivation.

To move from the first to second element in the model, an individual attends to and evaluates samples of this true score domain of information to develop an input sample of information. The target stimulus presents samples of the true score domain of information by expressions of behavior through verbal and nonverbal channels. Figure 1 depicts this model of information processing.

Researchers have attempted to explain the interactions between the verbal and visual or nonverbal components of communication (Archer & Akert, 1977). These two channels occur simultaneously in most communication situations and the contribution of each channel to the interpretation of behavior has been questioned. Some researchers have ventured estimates of the relative contribution of verbal and nonverbal channels. Birdwhistell suggested that "no more than 30 to 35% of the social meaning of a conversation or an interaction is carried by the words" (1970, pg.197). This was also posited by Argyle and his colleagues (Argyle, Alkema, & Gilmour, 1971; Argyle, Salter, Nicholson, Williams & Burgess, 1970) who found that nonverbal channels carried from 1.67 to 12.50 times the effect of verbal cues. The variance was due to the relative initial strength of the cues in both channels.

The best known research on this question has been that of Mehrabian. Based on studies of inconsistent messages where words intentionally contain one affect in the verbal channel and vocal paralanguage displays a contradictory emotion, Mehrabian (1972) concluded that only 7% of the total impact of an emotion is attributed to the verbal channel itself, 38% to the vocal paralanguage channel, and 55% to the facial channels. Thus, in the perception of emotions, these results indicated that nonverbal channels carry 13 times the impact of the verbal channel. Similarly, Gartner (1972) found that the visual communication system conveys more affective information, but less overall information than verbal or vocal channels. The study also reports less factual personal trait information other than emotional and interpersonal traits from visual communication systems.

Archer and Akert (1977) looked at the contributions of verbal and full (verbal and nonverbal channels combined) channels in interpreting a variety of interpersonal questions. It was determined that the full channel was significantly more accurate and Archer and Akert (1977) concluded that "social interpretation in a wide variety of naturalistic situations is much more accurate when one has available both nonverbal and verbal cues" (pg. 449).

## Statement of the Question

This study proposes that individuals display elements in the true score domain of information simultaneously through two channels of behavioral expression: content of answers to questions and visual cues. Although the true score domain of information is virtually infinite, this study will focus on two specific elements which have been found to be predictive of managerial job performance; indicators of personality and indicators of intelligence. These elements were chosen because of this linkage to job performance as well as the potential for their portrayal through both answer content and visual cues.

Through the development of structured interview formats and scoring guides, current interview research advocates attending primarily to one channel of applicant information, the content of applicant responses. However, research has shown that interviewers not only attend to what applicants say, but they also attend to and evaluate visual or nonverbal cues (Gifford, Ng and Wilkinson, 1985; Imada and Hakel, 1977; McGovern and Tinsley, 1978; Raza and

Carpenter, 1987; Young and Beir, 1977). In addition, evidence indicates that both verbal content and nonverbal messages affect interview outcomes such as performance predictions and hiring decisions (Burnett, 1993; Liden and Parsons, 1988). Additionally, a study by Burnett and Motowidlo (1996) suggested that a relationship existed between the content of interview answers and visual cues presented. Specifically, applicants who were judged higher on managerial effectiveness based solely on answer content were also judged higher on the basis of only visual information. This study focuses on why this relationship between judgments based on visual cues and judgments based on answer content exists.

Nonverbal behavior provides the interviewer with a distinct source of information from which inferences may be made concerning aspects of the individual. This information may complement, contradict, or confirm data presented by other sources such as verbal content of question answers, resume credentials, or aptitude test scores. Nonverbal behavior may also provide the interviewer with information that could not be derived from other sources. Current research on nonverbal behavior in the employment interview context has not documented the extent or manner in which nonverbal behavior contributes to interview judgments.

## Theoretical and Applied Contributions

Further understanding of this aspect of employment interviewing has both theoretical and applied value. The theoretical value comes from exploring the relationship between the verbal and nonverbal channels of communication utilized in an employment interview. If they both carry elements of the same information from the true score domain of information, this will extend our understanding of the way interview information should be processed.

The potential of improved accuracy of interview judgments has a definite applied value. The notion of accuracy implies a correspondence between a judgment and a criterion (Ambady & Rosenthal, 1992). Motowidlo (1986) posited that accuracy of individual judgement to be dependent on the accuracy with which the information sample matches the true score domain of information. If the two channels of behavioral expression, information content and visual presentation, both provide elements of the true score domain of information, accuracy could be increased by attendance to both channels of information.

Thus, the results of this study suggest ways to improve the processing of interview information by 1) exploring the relationship between the verbal and nonverbal channels of information; 2) providing an information processing model utilizing both channels of information; and 3) adding to research on the role of nonverbal cues in dispositional judgments.

# CHAPTER 2

# LITERATURE REVIEW

The function of communication is the "exchange of meaning" (Leathers, 1976 p3). Communication systems may be used to exchange meaning. In its simplest form, the communication system consists of five components, the encoder, channel, decoder, feedback, and noise. The encoder codes a message into symbols which are transmitted through either a verbal or nonverbal channel to the decoder. The decoder then translates the symbols for their meaning and provides feedback, again through the verbal or nonverbal channel. Throughout the system, noise or barriers to understanding occur. True communication has occurred when the intent of the encoder is understood by the decoder.

A channel is defined by Dittmann (1972) as any "set of communicative behaviors which is perceived by the interactants and which can be studied independently of other co-occurring behaviors" (p121). Two channels have been the focus of research, the verbal and nonverbal or visual channel.

## Utilization of Verbal and Nonverbal Channels in the Communication Process

Studies suggest that individuals can detect certain dispositional properties of other people on the basis of relatively little information. Visual expressive behaviors, such as gestures, eye contact, smiling, and physical appearance provide cues that contribute to this detection. There is evidence that these visual cues covary with and reveal certain dispositional properties (Lippa, 1983). The focus has been toward investigating the extent to which individuals are accurate in these evaluative judgments (Berry, 1991). One aspect of this focus has been on an individual's ability to detect the dispositional properties of others in lieu of extensive behavioral information.

For example, Kenny and his colleagues (Albright, Kenny and Malloy, 1988; Kenny, Horner, Kashy & Chu, 1990) found the college students were able to demonstrate substantial agreement in their judgments of another individual's traits. Similarly, Watson (1989) found associations between self and stranger ratings and Funder and Colvin (1988) reported greater than chance agreement between individuals' self-ratings of personality attributes and judgments provided by strangers exposed to a 5-min videotape of them participating in an interaction. Riggio, Lippa, and Salinas (1990) also found that perceivers could detect extroversion and masculinity-femininity on the basis of persuasive speech videotapes.

Dispositional judgments are also made on the basis of behavioral expressions presented through the informational content of communication. Hollandsworth, Kaselskis, Stevens, and Dressel (1979) reported that college recruitment interviewers indicated that applicant verbal content influenced their decisions more than did nonverbal behavior. Similar studies of interviewers' self reports of the importance of interviewee information indicate like findings (e.g. Drake, Kaplan, & Stone, 1972; Keil & Barbee, 1973; Tschirgi, 1973). Likewise, Hakel and Schuh (1971) analyzed responses from more than 2800 employment interviews and found that candidate statements concerning their sociability and good character were seen as important across seven different occupational categories. Content areas such as the ability to answer problem questions, explain ones' skills, and make positive self statements also have been deemed important (Keil & Barbee, 1973; McGovern, Tinsley, Liss-Levinson, Laventure, and Britton, 1975; Prazak, 1969).

Hall (1978) viewed the verbal and nonverbal systems as a total and inseparable unit. Likewise, Birdwhistell (1960) described verbal and nonverbal channels as infracommunication systems and that it is through the interrelationship of the two that a total communication system is achieved. Ekman (1965) highlighted this interrelationship between verbal and nonverbal modes of communication by outlining the functions of nonverbal communication as repeating, contradicting, substituting, or regulating the verbal content. The function of the nonverbal channel in this relationship between verbal and nonverbal channels was described by Argyle (1988) as accompanying speech for the purpose of managing turn-taking, feedback, and attention. Other nonverbal functions included expressing emotion, conveying interpersonal attitudes, and presenting personality to others. The four functions of nonverbal communication posited by Scherer (1980) are also symbolic of this interrelationship. Nonverbal channels are reported to function semantically as a substitute for verbal utterances or to clarify, contradict or modulate verbal content; syntactically by synchronizing verbal and nonverbal symbols;

pragmatically by indicating characteristics or states of the user; and dialogically by signifying the relationship between users.

Argyle (1988) cited five reasons why nonverbal behavior is essential in interpersonal communication. These reasons suggest nonverbal cues express additional or confirmatory information. For example, the first reason cited was that aspects of the individual such as personality traits and interpersonal skills are difficult to express through verbal content. Nonverbal cues, then, portray this information. The second reason stated that nonverbal behavior is very powerful, sometimes more powerful than the spoken word. The third reason nonverbal behavior is essential in interpersonal communication was that messages conveyed through nonverbal cues are seen to be genuine since these behaviors are less controllable than verbal communication. The fourth reason was that it may be inappropriate or uncomfortable to explicitly state certain feelings or attitudes through verbal channels. In these instances, nonverbal behavior is utilized. The fifth reason continued this logic by suggesting the use of a second channel of communication allowed the individual to support verbal content.

Researchers have expounded on the idea that the nonverbal channel serves as a clarification of verbal cues. Kerrdon (1978) states that gesture and speech are two separate modes of representation and are coordinate because both are guided by the same overall aim. This view is furthered by Leathers (1976) who posited that the verbal / nonverbal channel interaction occurs either congruently or incongruently. When the verbal and nonverbal systems are communicating essentially the same meaning, the systems are in a congruent state. An incongruent state occurs when the verbal and nonverbal systems are communicating conflicting messages. Tepper (1973) reported that when communication cues are transmitted simultaneously, the different channels acting together have a compensatory and additive effect. And, Fujimoto (1972) found that the most accurate communication occurs when both verbal and nonverbal symbols are consistent.

## Utilization of Verbal and Nonverbal channels in the Interview

Interviewers attend to both verbal and nonverbal communication (Gifford, Ng and Wilkinson, 1985; Imada and Hakel, 1977; McvGovern and Tinsley, 1978; Raza and Carpenter, 1987; Young and Beir, 1977). Numerous studies have investigated the contribution of different communication channels to employment interview assessments. Nonverbal behavior consists of dynamic and static visual cues. Dynamic cues involve some type of movement that can be changed from moment to moment. Examples of dynamic cues include gaze, smiling, gesturing, head movement or nodding, body orientation, and posture. Static cues are characteristics of an individual that cannot be easily altered in a given situation. Examples of static cues are age, gender, and physical attractiveness. In these studies, subjects were also presented with various other sources of applicant information.

Subjects were generally asked to evaluate video tapes of hypothetical applicants displaying different levels of nonverbal behavior. The use of video tapes was viewed as an acceptable substitute for an actual live interview as a

1977 study by Imada and Hakel demonstrated no significant difference in hiring decisions between live interviewers and observers of recorded interviews.

McGovern (1976; McGovern and Tinsley, 1978) created videotapes of experimental applicants who displayed varying amounts of nonverbal behavior including hand gestures, smiles, general body movement, eye contact, voice modulation, and response time. Applicants presented the same verbal content. Fifty-two professional personnel representatives rated the taped interviews on their ability to communicate, intelligence, leadership potential, maturity, persuasiveness, aggressiveness and initiative, confidence, enthusiasm and motivation, pleasant personality and sociability, and positive attitude. The level of nonverbal behavior displayed had a significant effect on interviewer judgments on all dimensions measured. Eighty-eight percent of the subjects who saw the applicant with high levels of nonverbal behavior would have asked them back for a second interview, while 100 percent of the subjects who saw the candidate displaying low levels of nonverbal behavior recommended not inviting the applicant for a second interview.

McGovern, Jones, and Morris (1979) replicated the study using students rather than professional personnel representatives as subjects. Although the students were more lenient, this study confirmed the earlier findings. The applicant with high levels of nonverbal behavior was accepted by 87% of the subjects, while the applicant displaying low levels of nonverbal behavior was rejected by 70% of the subjects.

Similar findings were reported by Imada and Hakel (1977). Nonverbal cues displayed by a trained female applicant were manipulated to be high or low levels while maintaining the same verbal content. In the high or immediate condition, the applicant displayed more smiling, more attentive posture, greater eye contact, less interpersonal distance and a direct body orientation. In the low or nonimmediate condition, the applicant displayed little or no eye contact, a slouched body posture, no smiling, greater interpersonal distance and indirect body orientation. The results indicated that nonverbal cues had a significant effect on interviewers impressions and decisions to hire, accounting for 25 percent of the variance in rating applicant qualifications; 49 percent of the variance in ratings of competence; 45 percent in ratings of probable success and 51 percent in hiring recommendations.

Two studies investigated the specific nonverbal cue of eye contact on interview outcomes. Tessler and Sushelsky (1978) varied social status and eye contact during simulated employment interviews. Social status was found to influence how eye contact was evaluated; low status applicants were given low ratings regardless of level of eye contact. High status applicants were rated significantly higher when constant or intermittent eye contact was maintained as opposed to no eye contact. Levels of eye contact alone did not affect rating of predicted job satisfaction or effectiveness. Likewise, Amalfitano and Kalt (1977; cited in Arvey, 1982) found that applicants who maintained eye contact with interviewers were rated as more alert, assertive, dependable, responsible, confident and as having more initiative. They were also more likely to be hired than the applicants who looked down.

Simulated loan application interviews were used by Wexley, Fugita, and Malone (1975). High or low levels of eye contact, smiling, gesturing, and appropriateness of voice tone were manipulated along with three levels of objective suitability to receive a loan. Seventy-eight student raters determined the applicant's suitability to receive a loan. Applicants who exhibited high levels of nonverbal behaviors during the interview received more favorable evaluations.

Hollandsworth, Kaxelski, Stevens, and Dressel (1979) asked college recruiters to use a modified Behaviorally Anchored Rating Scale (BARS) to rate applicants on dimensions relating to verbal, nonverbal, and articulative behaviors. Recruiters also indicated their hiring recommendation for each applicant. Discriminant analysis and univariate comparisons showed that verbal behavior and appropriateness of content accounted for more of the hiring decision variance than the other variables. However, significant univariate values were obtained for the nonverbal and articulative dimensions.

Dipboye and Wiley (1977) created passive and moderately aggressive applicants through the manipulation of nonverbal behaviors. The passive applicant maintained little eye contact, answered questions with a brief response and was viewed as shy, tense, and soft-spoken. The moderately aggressive candidate maintained eye contact and spoke forcefully. Recruiters were used as subjects and viewed one applicant on videotape and were then given a resume to review. A control group saw only the same resume. Subjects liked the moderately aggressive applicant more and attributed more socially desirable traits to this applicant than the passive applicant. Also, subjects were more willing to offer a second interview to the moderately aggressive candidate and to recommend hiring the moderately aggressive and resume-only applicants rather than the passive applicant.

Young and Beier (1977) also found that applicants engaging in more positive nonverbal behaviors were evaluated as more deserving of a job. Applicants in a simulated employment interview manipulated their nonverbal behavior to include more eye contact and smiling; more eye contact, smiling and head movement; or minimal eye contact, smiling and head movement. Verbal content was the same in all three interviews. Judges rated applicants displaying more eye contact, smiling and head movement as more deserving of the job.

Rasmussen (1984) manipulated nonverbal cues, resume credentials and verbal content in videotaped interviews. Nonverbal behavior included degree of eye contact, smiling, hand gesturing, head nodding, and tone of voice. Subjects also viewed resumes which depicted excellent academic achievement and highly relevant work experience or low academic achievement and little previous work experience. Eighty student subjects rated the applicants on a single 25 point job qualification scale. Resume credentials accounted for 19 percent of the variance in qualification ratings, while nonverbal behavior alone had a relatively small, nonsignificant effect. Rasmussen suggested that when there is variability in resume credentials and verbal content than the additional information provided by nonverbal cues may not be viewed as relevant. However, when members of an applicant pool are relatively similar in regard to verbal content and resume credentials, nonverbal behaviors could have an important effect on interviewers' decisions.

Additionally, Rasmussen found that the verbal content of the interview interacted significantly with the nonverbal behavior factor. This interaction accounted for 9 percent of the variance in qualification ratings. When positive verbal content was coupled with an absence of nonverbal behavior, lower ratings were obtained than when the same verbal content was paired with high levels of nonverbal behavior. Concurrently, when negative or weak verbal content was seen with an absence of nonverbal behavior ratings were higher than the same content with high levels of nonverbal cues. Rasmussen interpreted the interaction by suggesting that nonverbal behavior serves to "enhance the magnitude, but not the direction, of the effects of verbal content" (p554).

Parsons and Liden (1984) investigated the effect of nonverbal cues within the context of an actual, structured employment interview. Eight interviewers rated a total of 517 applicants on eight nonverbal cues; poise, clothing, personal cleanliness, posture, articulation, voice intensity, pauses before answers and eye contact. Interviewers also made a final judgment of overall qualification. Using multiple regression analysis, articulation, poise, pauses and eye contact were significant predictors of the hiring decision. Additionally, nonverbal information alone predicted 73 percent of the variance of interviewers' judgments and, when objective information was subsequently added, the variance accounted for increased by only 2 percent. These findings are similar to Forbes and Jackson's

(1980) field study in which job applicants who engaged in more eye contact, smiling and head movement were rated more favorably.

The effect of the nonverbal cue of physical attractiveness on interview ratings has also been investigated. An early study by Young and Beier (1977) failed to find support for the effect of physical attractiveness on interviewers' decision to hire. Since this finding was contradictory to previous, supportive results of the effect of physical attractiveness (Dipboye, Fromkin, & Wiback, 1975; Dipboye, Arvey, & Terpstra, 1977; Cash, Gillen, & Burns, 1977) Young and Beier (1977) posit that in the presence of other nonverbal behavior the effect of physical appearance is negated.

Support for the effect of physical attractiveness on interview ratings has been found by Kinicki and Lockwood (1985), Raza and Carpenter (1987), and Kinicki, Lockwood, Hom, and Griffeth (1990). Ratings of attraction and interview impressions of applicants by professional recruiters' were significantly related to judgments of suitability for hire and interviewing skill (Kinicki & Lockwood, 1985; Kinicki, et.al, 1990). Kinicki and Lockwood (1985) and Kinicki et.al. (1990) concluded that recruiters relied more on subjective impression information and attraction than objective information regarding work experience and academic achievement when making interview judgments. Similarly, Raza and Carpenter (1987) reported that decisions of applicant hirability and employability by professional interviewers were significantly related to ratings of physical attractiveness.

Baybrook (1985) explored the relationship between affiliative nonverbal behaviors (eye contact, smiling, gesturing, and forward lean) and credential information such as verbal responses describing academic preparation, work experience and interests to decision making in employment interviews. Videotaped simulations of interviews were rated by experienced interviewers on a set of job qualification scales and bipolar adjective scales. This study found that both nonverbal behaviors and credential information significantly influenced hiring recommendations. Fifteen to eighteen percent of the variance in interpersonal effectiveness ratings and less than 5 percent of the variance in task competency ratings was accounted for by nonverbal behaviors. Credential information accounted for 10 to 24 percent of the variance in task competency ratings and 4 to 8 percent of the variance in interpersonal effectiveness ratings. The interaction between nonverbal behavior and credential information was not significant and Baybrook (1985) hypothesized that under the simulated interview conditions each element makes an independent contribution to selection interview decision making.

Burnett (1993) simulated job interviews with 60 managers to investigate the role of nonverbal behavior in interview judgments. It was found that nonverbal cues of gaze, smile, hand movements, back/side lean, parallel body orientation, physical attractiveness, dress and vocal attractiveness, in combination, were significantly correlated with interview ratings.

The content of interview answers has been found to be a significant source of interview validity (Motowidlo, et al., 1992). Judgments made by individuals who did not have access to nonverbal cues were at least as valid as judgments made by interviewers who did. This finding may be explained by research results which depict multiple channels in the conveyance of messages (i.e. Hollandsworth et al., 1979; Parsons & Liden, 1984; Rasmussen, 1984). In fact, it was reported that when appropriate and relevant verbal information is available it is the primary, but not only, influence on interviewers' decisions (Hollandsworth et al., 1979; Parsons & Liden, 1984; Rasmussen, 1984).

## True Score Domain of Information Elements

The true score domain of information is described by Motowidlo (1986) as the total population of both positive and negative information available about the target stimulus. In an interview context, this is all the possible valid information about an applicant. An interviewer's task is to ascertain as much relevant, job related information as possible. In terms of the information processing model, this information is represented by the input sample. Relevant, job related information might include information regarding the applicant's academic achievements, past work experience, specific knowledges, skills, and abilities, communication skills, interpersonal skills, motivational skills, personality and intelligence.

To facilitate discussion and study, a specific subset of information determined by job was identified. The job was specified as a managerial job with performance requirements in the areas of leadership, teamwork, drive, and planning and organizing. Leadership was conceptualized as seeking opportunities for leadership; directing and guiding others toward the accomplishment of tasks by motivating and assessing their performance/behavior; persuading others to accept their own ideas and exhibiting confidence in those ideas; showing initiative; and taking charge. Teamwork was viewed as showing concern for group interests; cooperating with others and working to form harmonious work groups; prioritizing group interests above individual interests; helping and listening to others and showing consideration the needs and feelings of others. The performance requirement of drive was conceptualized as showing concern for task achievement; persisting to solve problems and overcome obstacles to task accomplishment; doing extra work and focusing high energy levels to solve problems or meet difficult deadlines; and volunteering to handle assignments or problems outside of their own area of responsibility. The last performance requirement, planning and organizing, was defined as accepting a methodical and systematic approach for solving all aspects of a problem; giving specific attention to detail; generating and evaluating alternative solutions; anticipating obstacles and developing plans to meet them; and setting appropriate priorities. Two individual characteristics which have been proven to be related to managerial performance and may be inferred from visual and content information in an interview context were chosen. These characteristics were the personality and intelligence of the individual.

### Personality

There are many alternative ways to describe the personality of an individual. The five-factor model was originally identified in factor analyses of trait attributions from peer observers (Cattell, 1946; Tupes and Christal, 1961).

And "after more than five decades of dedicated research into how individuals describe themselves and others, the five-factor model for describing the universe of personality trait descriptors enjoys a substantial lead over its primary competitors"(Briggs, 1992, p 254). Briggs (1992) continues by citing the five-factor model as the "model of choice" for individuals needing to represent the domain of personality variables "broadly and systematically" (Briggs, 1992, p 254). The support for the five-factor model is further substantiated by McCrae and John (1992), Digman, (1990), and McCrae and Costa (1985).

The five-factor model describes five broad-based dimensions or factors of personality. They are Extroversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. Of these, the most relevant for the purposes of this study are Extroversion, Agreeableness, and Conscientiousness. Extroversion is defined by traits such as assertiveness, sociability, energetic, talkativeness, frankness, composure, and cheerfulness. Agreeableness is defined by traits including good-natured, emotionally mature, mildness, cooperativeness, trustfulness, kindliness, adaptability, attentiveness to people and self-sufficiency. Conscientiousness or dependability is defined by traits of responsibility, perseverance, conventionality, and orderliness.

Extroversion and Agreeableness should be related to managerial performance in the areas of Leadership and Teamwork. Conscientiousness should be related to management performance in the areas of Planning and Organizing and Drive. The linkage between nonverbal cues, personality and job performance emerges from the argument that certain personality traits underlie specific nonverbal behaviors, and that these traits, in turn, are relevant to job performance. Implicit personality theory suggests expectancies of co-occurances of personality traits and behaviors. Several studies have found relationships between personality traits and objectively measured nonverbal behaviors or physical attributes (Albright, Kenny, & Malloy, 1988; Borkenau & Liebler, 1992; Dion, Berscheid, & Walster, 1972; Funder, 1983; Funder & Colvin, 1988; Funder & Sneed, 1993; Gangestad, Simpson, Digeronimo, & Biek, 1992; Kenny, Horner, Kashy & Chu, 1992). Even in situations where there is no interaction between individuals and the only available information is physical attributes, trait assessments have been found to be fairly accurate (Cleeton & Knight, 1924; Hunt & Lin, 1967; Norman & Goldberg, 1966; Passini & Norman, 1966). Furthermore, evidence indicates that judgments made at this "zero acquaintance" are stable even after the individuals have interacted (Kenny et al., 1992) and the accuracy of trait assessments increases directly with the degree of acquaintanceship (Panunonen, 1989).

In an interview situation, the degree of acquaintance is low. Interaction between the interviewer and the applicant takes place within a limited period of time, typically 30 to 60 minutes. During that time period, the interviewer must obtain adequate information in order to make judgments regarding the applicant's performance potential. The interviewer is initially presented with the physical attributes of the applicant (attractiveness, gender, age, dress, etc.), but as the interview progresses the applicant provides dynamic visual and audible cues. Researchers argue that these cues influence the assessment of personality traits and the subsequent interview ratings.

No specific guidelines exist for defining the co-occurrences between traits and behaviors, or as Borkenau called it, “what goes with what” (1992, pp 297 - 298). Research has, however, indicated significant relations between personality factors and specific nonverbal cues (Albright et al., 1988; Argyle, 1988; Borkenau & Liebler, 1992; Funder & Sneed, 1993; Kenny et al., 1992).

Extraversion, has been found to be reflected in several dynamic cues, including increased eye contact / gaze, smiling, more spatial proximity, more expressiveness, more rapid body movement, and more head movements (Argyle, 1988; Borkenau & Liebler, 1992; Funder & Sneed, 1993; Kenny et al., 1992). Static visual cues of attractiveness, refined appearance, and showy, fashionable dress have also been related to Extraversion (Albright et al., 1988; Borkenau & Liebler, 1992).

Agreeableness has been found to be related to a number of dynamic visual cues. Kenny et al. (1992) reported a significant relationship between smiling and Agreeableness and rapid body movement and Agreeableness. Borkenau and Liebler (1992) found similar relationships between Agreeableness and friendly expression and between Agreeableness and frequency of hand movement.

The personality trait of Conscientiousness has been found to be related to one dynamic trait. Borkenau and Liebler (1992) reported a significant, negative, relationship between a relaxed or slouched posture and Conscientiousness. The static visual cue of dress has also been associated with this trait. Borkenau and Liebler (1992), Kenny et al. (1992) and Albright et al. (1988) all reported significant correlations between Conscientiousness and dress formality.

Based on these studies, six nonverbal cues found to be related to Agreeableness, Extroversion, or Conscientiousness were included in this study. They are Gaze (the amount of time the applicant looks in the direction of the interviewer's face), Smile (the amount of time the applicant smiles), Hand Movement (the amount of time the applicant moves one or both hands), Back/side Lean (the amount of time the applicant leans either backwards or sideways), Parallel Orientation (the amount of time the applicant faces the interviewer directly), and Physical Attractiveness.

Support of the relationship between personality traits and job performance was found in a 1991 meta-analysis by Barrick and Mount. This review investigated the relationship between the five personality factors and job performance across different occupational groups. It was found that the personality factor Conscientiousness was a consistently valid predictor of performance for all occupational groups. Within the occupational group of manager, defined as foreman to top executives, the traits of Conscientiousness and Extroversion were the most significant predictors of performance. Additional support comes from a Tett, Jackson and Rothstein (1991) meta-analysis in which corrected mean validities between personality and job performance were r=.33 for Agreeableness, r=.18 for Conscientiousness, and r=.16 for Extroversion.

## Intelligence

The difference between individual intelligence has been described as the “most profound difference that we can recognize”(Wonderlic, 1982, p4). Descriptions of individuals by higher or lower levels of intelligence exist in the earliest records of mankind and exist in all cultures. Empirical evidence supports the role of intellectual or cognitive ability in the prediction of work behavior across a variety of jobs (e.g. Ghiselli, 1973; Schmidt, Hunter & Pearlman, 1981). For example, Hunter (1980) used a sample of more than 400 jobs stratified into five levels of complexity of information processing demands and found that the validity of general mental ability ranged from .23 at the lowest level to .56 at the highest complexity level. This was further supported by Hunter and Hunter (1984) who estimated the average criterion validity of general cognitive ability tests, corrected for sampling error, criterion unreliability, and range restriction, to be approximately 0.54 for training success and 0.45 for job proficiency.

Similarly, Campbell, Dunnette, Lawler and Weick (1970) identified cognitive and noncognitive predictors of managerial success which included "tests of intellectual ability, perceptual accuracy, and personality or interests" (p. 129). This finding was replicated by Gellatly, Paunonen, Meyer, Jackson, and Goffin (1991) who found that measures of personality, vocational interests, and cognitive ability predicted on-the-job performance and satisfaction of first line supervisors.

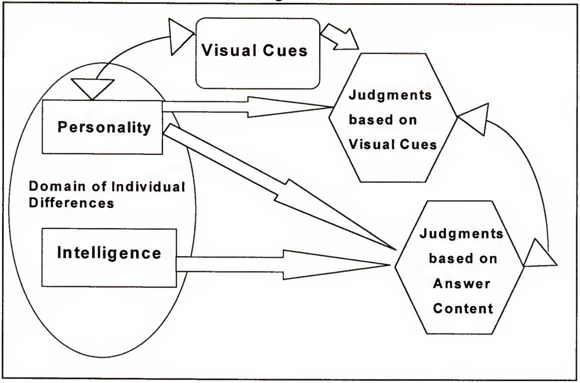
Schippmann (1989) found similar results in an investigation of the extent to which general mental ability and personality characteristics such as dominance, independence, and risk taking distinguish more successful from less successful managers. This study found that subjects who succeeded in management tended to be more intelligent. The subjects also were more achievement oriented and took an active and independent role in group situations.

## Proposed Model and Research Propositions

Traditionally, interviewers have been instructed to attend to the verbal content of an interview. Nonverbal behaviors were seen as irrelevant and even capable of biasing objective information. As such, interviewers were trained to ignore them. However, if nonverbal behaviors exhibited in an employment interview convey relevant, job related elements of the true score domain of applicant information, then interview validity would be enhanced through the attendance to these behaviors.

The proposed research model indicates elements of the true score domain of interview information being transmitted through both verbal information and visual cues. If both channels convey relevant, job related information, attendance to each type of information in making interview judgments should yield similar results. Thus, a relationship between judgments of predicted job performance based on visual behaviors and answer content would occur. This relationship can be seen in Figure 2.

Figure 2


Visual Cues
Personality
Domain of Individual Differences
Intelligence
Judgments based on Visual Cues
Judgments based on Answer Content

From this pictorial, several specific hypotheses may be advanced.

Hypothesis One: The favorability of judgments about interviewees based on visual cues is positively related to the favorability of judgments about interviewees based on the content of their answers to interview questions.

Hypothesis Two: The favorablity of judgments about interviewees based on visual cues is positively related to interviewees' a) agreeableness, b) conscientiousness, and c) extroversion.

Hypothesis Three: The favorability of judgments about interviewees based on the content of answers to interview questions is positively related to interviewees' a) agreeableness, b) conscientiousness, and c) extroversion.

Hypothesis Four: When interviewees' agreeableness, conscientiousness, and extroversion are held constant, the relation between the favorability of judgments based on visual cues and the favorability of judgments based on the content of answers to interview questions disappears.

Hypothesis Five: The favorability of judgments about interviewees based on the content of their answers to interview questions is positively related to interviewees' intelligence.

Hypothesis Six: The favorability of judgments about interviewees based on visual cues is related to specific visual cues in these ways:

a) positively with gaze,

b) positively with smile,

c) positively with hand movement,

d) positively with parallel body orientation,

e) negatively with back/side lean, and

f) positively with physical attractiveness.

Hypothesis Seven: The specific visual cues and personality variables are related in these ways:

Agreeableness is related

a) positively to hand movement and

b) positively to smiling;

Extroversion is related

c) positively to gaze,

d) positively to hand movement,

e) positively to smiling, and

f) positively to physical attractiveness;

Conscientiousness is related

g) positively to parallel body orientation and

h) negatively to back/side lean.

Hypothesis Eight: a) When hand movement and smile are held constant, the relation between interviewees' agreeableness and the favorability of judgments about them based on visual cues disappears; b) when gaze, hand movement, smile and physical attractiveness are held constant, the relation between interviewees' extroversion and the favorability of judgments about them based on visual cues disappears; and c) when parallel body orientation and back/side lean are held constant, the relation between interviewees' conscientiousness and the favorability of judgments about them based on visual cues disappears.

# CHAPTER 3

# METHODOLOGY

## Sample

The sample includes 116 men and 90 women from a large southeastern university. Their ages ranged from 18 to 38 years, with a mean age of 21 years. The sample was predominantly white (79.1%) with 1.9% Black, 7.1% Hispanic and 9.0% Asian subjects. Most were juniors (76.7%). Close to half (49.7%) had worked part time only, while the remainder was currently employed full time (12.6%) or worked full time during summer and holidays (37.7%).

Students' self selected into the study and received extra credit for a Principles of Management course for their participation. Subjects were administered the NEO Five Factor Inventory, which is a personality test, and the Wonderlic test of Intelligence. They were then asked to imagine that they were applying for an entry level managerial position and participated in a videotaped interview.

## Variables

### Personality

Measurements of extroversion, agreeableness, and conscientiousness were taken via a self report personality questionnaire, the NEO Five Factor Inventory. The NEO Five Factor Inventory was chosen from a range of instruments designed to measure the personality factors. These instruments include Goldberg's 100 clusters of synonyms, Goldberg's 100 unpaired adjectives, Goldberg's 100 paired adjectives, IAS-R, IASR-B5, Hogan Personality Inventory, NEO Personality Inventory, and the NEO Five Factor Inventory.

One commonality between the above measures is that they were all designed to assess the five-factor model. Briggs (1992) recommended using such a measure because (1) these measures would have been developed to operationalize the five primary domains; (2) the definitions of the five domains would be more closely aligned with the research definitions; and (3) such a measure would be less likely to have emphasized or excluded one of the dimensions.

The NEO-FFI is a 60-item short version of Costa and McCrae's NEO Personality Inventory. While the full personality inventory measures the five personality domains and facet scales for Neuroticism, Extroversion and Openness, the abridged version offers only domain scores for the five dimensions. Domain level reliabilites are excellent ranging from .86 to .95 and short-term test-retest reliability has also been documented. Studies conducted by Costa, McCrae and colleagues have demonstrated construct and convergent validity of the scales. Instruments with which the NEO-FFI has been related to include the Minnesota Multiphasic Personality Inventory, California Psychological Inventory, Guilford-Zimmerman Temperament Survey, and the Adjective Check List.

## Intelligence

Cognitive ability or intelligence as it relates to job performance has been measured with a number of instruments. These include the Otis Self-Administering Tests of Mental Ability, the Otis General Intelligence Examination, the Wesman Personnel Classification Test, and the Wonderlic Personnel Test. The choice of a measure of intelligence is a difficult choice. In fact, Flanagan (1958) states that "it may almost be as difficult to show superiority for one "intelligence" test over another as it is to show superiority for a particular brand of soap" (p.331). The Wonderlic Personnel Test was chosen for this study as a measure of general intelligence for a number of reasons. First, the Wonderlic was adapted in 1938 from the Otis Self Administering Tests of Mental Ability. It contains many of the positive features of the Otis Test, but has been continually updated and revised. Additionally, it correlates with the Otis test from .81 to .87 (Mursell, 1949). The Wesman Personnel Classification Test (PCT) is somewhat dated with the most recent revision being in 1965, more than 30 years ago. The PCT is a timed 28 minute test of two parts. Part I measure verbal reasoning ability with 40 questions that involve reasoning through analogy and the perception of relationships. Part II is the numerical section. It contains 20 items that involve addition, subtraction, multiplication and division of integers, decimals and fractions, as well as calculation of percentages, square roots, and ratios. The split half and alternate form reliabilities of the PCT are in the low .80's. It, too, correlates with the Otis and Wonderlic test at about .70 (Flanagan, 1958).

The manual presents three types of "validity" evidence. The first type considers the PCT's relationship to the Otis Test and the Wonderlic Test. Six samples of between 100 and 200 cases are cited. These samples have correlations that range from .68 to .84. Secondly, it is shown that the mean score on each of the test sections and the total increases for populations of successively higher levels of education. Lastly, validity studies on industrial populations are considered. These populations include office, shop and production workers, inspection supervisors, U.S. Air Force captains and executive trainees.

The Wonderlic Personnel Test (WPT) touted as a "widely used measure of general mental ability or intelligence" (Wonderlic, 1982). Whetzel and McDaniel (1988) cite it and the Otis Test of General Mental Ability as the "most frequently used predictors in personnel selection" (p. 132). According to Wonderlic and Associates, Inc. more than 90 million copies of the test have been sold and more than 15,000 organizations have used it in their selection process. The manual has been continually updated with its current revision being in 1992. It is a 50 item, 12 minute test which includes problems such as analogies, analysis of geometric figures, arithmetic problems, disarranged sentences, similarities, logic, definitions, judgment, and spatial relations. The WPT has been found to correlate very closely (.91) with the full scale Weschler Adult Intelligence Scale (Dodrill, 1981) and .56 - .80 with the Aptitude G of the General Aptitude Test Battery (Belcher, 1990). The test-retest reliability is cited as .82 to .99, while split-half correlations range from .88 to .94 and parallel forms range from .73 to .95 (Weed & Mitchell, 1980; Wonderlic, 1982). Likewise, the long term reliability of the WPT was cited as .94 for a group of 30 normal adults administered the test five years apart (Dodrill, 1983). An examination of cultural bias in the WPT was conducted by Jensen (1977). This study reported that in a representative sample of 1500 whites and blacks the WPT showed very little evidence of cultural bias with respect to race.

Numerous studies have validated the WPT as it relates to the prediction of managerial effectiveness. These include predictions of Bake Shop Managers performance (Knault, 1949), First line Production Supervisors (Meyer, 1951), Supervisors (Jennings, 1953; Huttner, Stene, 1958), Office Supervisors (Holmes, 1950), and Bank Branch Managers (Wonderlic 1972). Additionally, in a study to find predictors of managerial effectiveness for use in staffing and selection, the WPT held up in cross validation involving the relationship of 98 measures of personal characteristics such as intelligence, empathy, vocational interest, personality and bibliographical experiences (Mahoney, Jerdee & Nash, 1960). Furthermore, the WPT is cited as "probably the most widely used test in business and industry today, and it has demonstrated its ability to predict in a variety of situations" (p. 92) in Principles of Personnel Testing (Lawsche and Balma, 1966). Likewise, Schmitt (1985) regards the WPT as a "reliable and reasonably economical measure of general ability . . . valid in varying degree for essentially all jobs. Thus, the WPT has much to recommend it." (p.1757).

After careful consideration of the data regarding the three tests of intelligence, the Otis Self Administering Tests of Mental Ability, the Wesman

Personnel Classification Test and the Wonderlic Personnel Test, the Wonderlic Personnel Test was chosen to measure general intelligence. It is highly correlated with the other two measures, as well as the Weschler and the General Aptitude Battery. It has strong reliability and shows evidence of validity for managerial positions, while the recent updates of the manual (1992) and the test itself (1983) add to its attractiveness. Furthermore, the WPT appears to be an accepted measure in the field.

The Wonderlic Personnel Test was administered to each of the subjects individually. The administration was timed and they had 12 minutes to complete the test. Scores on the WPT ranged from 11 to 28 with a mean score of 25.45 and a standard deviation of 5.26. This corresponds to the 26 mean score of individuals completing 14 years of education reported in the Wonderlic Users Manuel (Wonderlic, 1993; p 18).

### Videotaped Interviews

A situational interview of each subject was conducted and videotaped. The interview, which had been validated through a previous study (Burnett, 1993), focused on four dimensions of managerial effectiveness: leadership, teamwork, drive and planning and organizing. Leadership was defined as seeking opportunities for leadership; directing and guiding others toward the accomplishment of tasks by motivating and assessing their performance/behavior; persuading others to accept own ideas and exhibiting confidence in those ideas; showing initiative; taking charge. Teamwork was defined as emphasizing and showing concern for group interests; cooperating with others and working to form harmonious work groups; prioritizing group interests above individual interests; helping and listening to others and showing consideration for their needs and feelings. Drive was defined as showing concern for task achievement; persisting to solve problems and overcome obstacles to task accomplishment; doing extra work and focusing high energy levels to solve problems or meet difficult deadlines; and volunteering to handle assignments or problems outside own area of responsibility. Planning and organizing was defined as accepting a methodical and systematic approach for solving all aspects of a problem; giving specific attention to detail; generating and evaluating alternative solutions thoroughly; anticipating obstacles and developing plans to meet them; and setting appropriate priorities.

The dimension of overall job performance was also measured. This was defined as performing the job well in all or almost all areas; exceeding standards and expectations; performing the important areas of the job adequately; meeting standards and expectations for adequate performance and performing important areas of the job poorly while not meeting standards and expectations for adequate job performance.

Each subject was instructed to presume they were interviewing for an entry level managerial position. They were asked four questions which described a hypothetical situation in the future and invited them to describe how they would behave in the situation. Appendix A provides the interview questions and corresponding job dimensions.

Behavioral anchors for these interview dimensions were developed in Burnette's 1993 study of the effect of nonverbal cues on employment interview validity. The behavioral anchors provide examples of high, moderate, and low levels of behavior for each of the four interview dimensions.

The interviews were conducted in the same location by the same interviewer with the same camera setup. Specifically, subjects were seated facing the interviewer with the camera located just behind the interviewer's right shoulder. This allowed an unobstructed view of the applicant.

## Visual Cues

There are numerous visual cues presented by an applicant during an employment interview. Research suggests both dynamic and static visual cues have an effect on the favorability and / or the validity of interviewers' employment decisions. Research has also indicated a number of dynamic and static visual cues that are related to aspects of an individual's personality. These include gaze, smile, expression, head movement, posture, hand movement, body movement, proximity, attractiveness, refined appearance, and dress (i.e., Albright, Kenny, & Malloy, 1988; Borkenau & Liebler, 1992; Dion, Berscheid, & Walster, 1972; Funder, 1983; Funder & Colvin, 1988; Funder & Sneed, 1993; Gangestad, Simpson, Digeronimo, & Biek, 1992; Kenny et al., 1992).

Additionally, Burnett (1993) identified five dynamic cues and two static cues most likely to be relevant for predicting job performance for entry-level managers. These included the dynamic visual cues of gaze, smile, hand movements, back/side lean, and parallel body orientation and static visual cue of physical attractiveness.

An analysis of the above literature led to the identification of one static and five dynamic visual cues which both reflected related personality traits and were relevant for the prediction of managerial job performance. The dynamic visual cues of gaze, smiling, hand movement, back/side lean and parallel body orientation were measured according to definitions and measures adapted from earlier studies (Burnett, 1993; Knapp & Hall, 1992; Mehrabian, 1972; Parson & Liden, 1984; Rasmussen, 1984). The dynamic visual cues were defined and measured as follows:

A) Gaze was when the applicant looked in the direction of the interviewer's face or head. More gaze was considered positive.

B) Smiling was measured when the corners of the lips were curled upward and more smiling was considered positive.

C) Hand movement was when the applicant moves one or both hands. The portion of the body from the wrist to the fingertips was considered the hand and more hand movement was positive.

D) Back/side lean was when the applicant's body was tilted in a backward or sideways direction. Less back/side lean was considered positive.

E) Parallel body orientation was when the applicant's body was oriented toward the interviewer. More parallel, or direct, body orientation was considered positive.

To measure the dynamic visual cues, the video taped interviews were grouped into sets of approximately 20 interviews. A two-minute segment was taken from each original interview. The segment began at the beginning of the interviewees response to the first question and lasted 120 seconds.

Student judges were trained to rate each specific visual cue using a stop watch. The stop watch enabled the judges to keep a cumulative record of the duration of each visual cue. At least 10 judges rated each of the dynamic visual cues. Follow up interviews were conducted with raters to verify the definitional understanding of the measured visual cues.

The static visual cue of physical attractiveness was also measured. Physical attractiveness was defined as the degree of appeal of the applicant's physical appearance. Greater physical attractiveness was considered positive.

To measure physical attractiveness, a 15-second segment from the beginning of each interview was recorded. This segment had the applicant neither moving nor speaking. A minimum of ten student judges rated the physical attractiveness of each applicant. This was done on a 7-point Likert scale. The stem was “the individual is”: and scale attributes were (7) extremely attractive; (6) very attractive; (5) attractive; (4) neutral; (3) unattractive; (2) very unattractive; (1) extremely unattractive. Follow-up interviews were also conducted with raters to verify the definitional understanding of the attractiveness scale.

## Ratings of Managerial Effectiveness Based on Visual Cues

Student raters received a ten minute training session on the interview questions and managerial dimensions. The session included familiarization with interview questions, dimension definitions and behavioral anchors. Raters watched silent videotaped compilations of 10 interviews in which they saw the interview in its entirety.

Immediately after viewing each interview, raters made their ratings on each of the four managerial dimensions and the dimension of overall job performance. Raters answered three manipulation check questions and provided demographic information at the completion of the session. The three manipulation check questions were: (1) How concerned were you with making accurate ratings of the interview? (5 - very concerned; 1 - not very concerned); (2) Were the definitions and levels (high, moderate, low) of the rating dimensions - leadership, teamwork, drive, planning and organizing - clear and understandable to you? (5 - very clear; 1 - very unclear); (3) How much information did you feel you had to make the ratings? (5 - a great deal of information; 1 - hardly any information).

### Ratings of Managerial Effectiveness Based on Interview Content

The information content of the videotaped interviews was transcribed into written form. The written transcripts were not verbatim but rather contained the essential information portrayed by the applicant. This was done to abbreviate the written material and to filter out subjects' stylistic speech characteristics that might be evident in question answers. Each interview was transcribed by the same individual to maximize continuity and minimize any possible information biases.

Each written transcript was judged by 10 student raters as to the subject's exhibition of each of the managerial dimensions, leadership, teamwork, drive, planning and organizing through the content of the interview answers. Each rater was given a ten-minute informational training session on the dimension definitions and their corresponding behavioral anchors. Raters also completed three manipulation check questions and provided demographic information. The three manipulation check questions were: (1) How concerned were you with making accurate ratings of the interview? (5 - very concerned; 1 - not very concerned); (2) Were the definitions and levels (high, moderate, low) of the rating dimensions - leadership, teamwork, drive, planning and organizing - clear and understandable to you? (5 - very clear; 1 - very unclear); (3) How much information did you feel you had to make the ratings? (5 - a great deal of information; 1 - hardly any information).

# CHAPTER 4

# RESULTS

## Reliabilities

Reliability measures of (1) visual cues, (2) interview judgments based on visual cues and (3) interview judgments based on answer content were calculated. The visual cues of gaze, smile, hand movement, forward/parallel lean, back/side lean and physical attractiveness, were measured by five to ten judges. Scores for each cue were calculated by taking the average of the judge's ratings.

Interclass correlations were calculated to provide reliabilities for the visual cues allowing assessment of measurement error. The study design resulted in each cue being measured by a different set of judges randomly selected from a larger population of judges. This corresponds with the case one interclass correlation as described by Shrout and Fleiss (1979).

Individual ratings of visual cues were not used. Rather the mean of a number of ratings was the unit of analysis. In such a case, it is the reliability of the mean rating that is of interest. Therefore, the reliability of the mean ratings was adjusted by the Spearman-Brown formula. Reliability estimates for hand movement were r=.65 and r=.90 adjusted; r=.45 and r=.81 adjusted for smile;

r=.56 and r=.87 adjusted for forward/parallel lean; r=.62 and r=.89 adjusted for back/side lean; r=.27 and r=.65 adjusted for gaze.

The correlation between parallel body orientation and back/side lean was very high (r=-.94). Therefore, the two scores were combined by subtracting back/side lean from parallel body orientation to form a new variable called Attentive Body Orientation. By Hypothesis Seven g and h, attentive body orientation should be positively correlated with conscientiousness. By Hypothesis Six d and e, it should be positively correlated with judgments based on visual cues.

The static visual cue of physical attractiveness was rated by a minimum of ten judges. Scores were calculated by taking an average of the ratings. Case one intraclass correlations estimated the reliability for these ratings as r=.41 (Shrout & Fleiss, 1979). As mean ratings were the unit of analysis, reliabilities were adjusted by the Spearman-Brown formula. This yielded a reliability estimate of r=.87 for the ten judges.

The videotaped interviews were judged for managerial effectiveness on the basis of visual cues only. A minimum of ten judges rated each interview on the four managerial dimensions and overall effectiveness. These ratings were summed for each rater to obtain total interview scores. The final interview score was calculated by averaging the total interview scores. Again, the case one intraclass correlation was calculated (Shrout & Fleiss, 1979). The resulting reliability was r=.44, which yielded an estimated reliability of r=.89 when adjusted by the Spearman-Brown formula. The adjustment was required as the mean rating was the unit of analysis.

Ratings of managerial effectiveness based on the content of interview answers were made by 10 judges. Each interview was rated on the four managerial dimensions and overall effectiveness. These ratings were summed for each rater to obtain total interview scores. The final interview score was calculated by averaging the total interview scores. As before, the case one intraclass correlation was used to determine rating reliabilities. The resulting correlation of the ten raters was r=.30. Use of mean ratings as the unit of analysis required adjustment by the Spearman-Brown formula. The adjustment yielded an estimated reliability of r=.81.

## Manipulation Check Questions

Subjects who judged the managerial effectiveness of the applicant based on visual cues and based on answer content responded to three manipulation check questions. The three manipulation check questions were: (1) How concerned were you with making accurate ratings of the interview? (5 - very concerned; 1 - not very concerned); (2) Were the definitions and levels (high, moderate, low) of the rating dimensions - leadership, teamwork, drive, planning and organizing - clear and understandable to you? (5 - very clear; 1 - very unclear); (3) How much information did you feel you had to make the ratings? (5 - a great deal of information; 1 - hardly any information).

A total of 82 different subjects made interview judgments based on answer content while 154 different subjects used visual information. Responses indicated that both subjects using visual cues and subjects using answer content were considerably concerned with making accurate ratings (mean 3.70, s.d. .09 and mean 3.70, s.d. 1.18 respectively). Both groups of subjects also felt that the rating dimension definitions and levels were clear and understandable (visual mean 4.02, s.d. 1.19; content mean 3.68, s.d. 1.33). The subjects differed in terms of how much information they felt they had to make the interview ratings. Individuals exposed to only visual cues indicated that they had a small to moderate amounts of information available (mean 2.88, s.d. .98), while individuals who read interview answer content reported having a moderate to considerable amounts of information available to make their ratings (mean 3.33, s.d. .98).

## Data Analysis

Means and standard deviations are reported in Table One. The correlation matrix of all variables is reported in Table Three. These variables include the dynamic visual cues, gaze, hand movement, body orientation and smile; the static visual cue, physical attractiveness; interview ratings based on visual cues; interview ratings based on content; intelligence scores; and personality scores. All tests are two tailed.

Correlational analysis was used to determine the relationship between favorability ratings of the interviewee based on visual cues and favorability interview ratings based on answer content. Interview ratings using the two types of information, visual cues and content, were significantly correlated ($r=.22$ $p = .00$). These results support hypothesis one and indicate that there is a

Table 1

| Variable | Number of Cases | Mean | Standard Deviation |
|---|---|---|---|
| Gaze | 204 | 88.46 | 16.48 |
| Hand Movement | 198 | 26.26 | 22.26 |
| Attentive Body Orientation | 206 | 33.90 | 86.97 |
| Smile | 207 | 8.52 | 9.35 |
| Physical Attractiveness | 208 | 3.61 | .86 |
| Interview Ratings by Visual Cues | 208 | 19.60 | 4.23 |
| Interview Ratings by Answer Content | 198 | 21.54 | 3.23 |
| Wonderlic Test | 209 | 25.45 | 5.26 |
| Extroversion | 199 | 31.08 | 6.05 |
| Conscientiousness | 199 | 34.52 | 6.15 |
| Agreeableness | 199 | 30.36 | 6.22 |

Table 3

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.Gaze | 1.0 | | | | | | | | | | | | |
| 2.Handmovement | -.21* | 1.0 | | | | | | | | | | | |
| 3.Parallel Lean | .09 | -.06 | 1.0 | | | | | | | | | | |
| 4.Backside Lean | -.10 | .08 | -.94 | 1.0 | | | | | | | | | |
| 5.Attentive Body Orien | .09 | -.07 | .98* | -.99* | 1.0 | | | | | | | | |
| 6.Smile | .02 | -.01 | .03 | .00 | .02 | 1.0 | | | | | | | |
| 7.Phys Attractiveness | -.15* | .08 | -.05 | .10 | -.08 | .05 | 1.0 | | | | | | |
| 8.Visual Cue Int Rate | -.03 | .18* | .01 | .05 | -.02 | .13 | .28* | 1.0 | | | | | |
| 9.Content Int Rate | -.02 | .10 | -.09 | .12 | -.11 | -.12 | -.01 | .22* | 1.00 | | | | |
| 10.Intelligence | .07 | -.02 | .00 | -.02 | .00 | -.01 | .05 | -.09 | .05 | 1.0 | | | |
| 11.Agreeableness | .05 | .03 | -.04 | .02 | -.03 | .13 | .08 | .14* | .15* | -.03 | 1.0 | | |
| 12.Conscientious | .01 | -.03 | -.14* | .16* | -.16* | .03 | .05 | -.03 | .15* | .11 | .30* | 1.0 | |
| 13.Extroversion | -.04 | .11 | -.15* | .18* | -.17* | .11 | .06 | .08 | .07 | -.08 | .31* | .23* | 1.0 |

*Significant at .05 or less

significant, positive relationship between favorability of interview judgments based on visual cues alone and favorability of interview judgments based on the content of interview answers.

Hypothesis two considers the relationship of personality attributes shown to be related to managerial job performance to ratings of favorability of interview judgments based on visual cues. The personality dimensions of agreeableness, conscientiousness and extroversion had been identified as related to effective managerial performance. Measures of these attributes of interviewee's personality were correlated with judgements of managerial effectiveness based on visual cues. A significant correlation was found between agreeableness ($r^2$ = .14, p =.05) and judgements based on visual cues, while correlations between conscientiousness and extroversion were nonsignificant ($r^2$ = -.03, p = .65 and r = .08, r = .23, respectively). A positive, significant correlation indicates the direction and strength of the association between these two variables, the coefficient of determination represents the percentage of variance in judgments based on visual cues that can be explained by variance associated with these personality attributes. In this case, the coefficient of determination was $r^2$=.02 for agreeableness. This indicates that 2 percent of the difference in judgments based on the content of applicant answers can be explained by their differences in agreeableness. This finding partially supports the second hypothesis of a positive relationship between interviewee levels of agreeableness, conscientiousness and extroversion and favorability of interview judgments based on visual cues.

Similarly, the third hypothesis considered the relationship between an interviewee's job related personality attributes of agreeableness, conscientiousness, and extroversion and favorability of interview judgments based on answer content. Measurements of these personality dimensions were correlated with judgements of managerial effectiveness based on answer content. A significant correlation was found between agreeableness ($r^2 = .15$, $p = .04$) and conscientiousness ($r^2 = .15$, $p = .04$) and judgements based on answer content. The correlation between extroversion and favorability ratings based on answer content was nonsignificant ($r^2 = .07$, $p = .35$). As with the second hypothesis, the coefficient of determination was calculated to indicate the percentage of variance in judgments based on answer content that can be explained by variance associated with agreeableness and conscientiousness. In this case, the coefficients of determination were $r^2 = .02$ for agreeableness and $r^2 = .02$ for conscientiousness. This indicates that 2 percent of the difference in judgments based on answer content can be explained by differences in the interviewee's personality attributes of agreeableness and conscientiousness. This finding provides support for the third hypothesis in that individuals possessing higher levels of job related personality attributes, in this case, conscientiousness and agreeableness were rated more favorably based on the content of their interview answers.

The fourth hypothesis suggests that when the agreeableness, conscientiousness, and extroversion attributes of interviewees are held constant, the relation between the favorability of judgments based on visual cues and the favorability of judgments based on answer content disappears. Partial correlation coefficients provide a measure of linear association between two variables while adjusting for the linear effects of additional variables. The third order partial correlation coefficient, holding constant the personality dimensions of agreeableness, conscientiousness, and extroversion was still significant ($r^2$ = .21, p = .00). In fact, the strength of the relationship remained relatively unchanged.

Hypothesis five suggests that the favorability of judgments about interviewees based on answer content is positively related to interviewee intelligence. This relationship was examined through a correlational analysis. Intelligence as measured by the Wonderlic score was correlated with interview judgements based on answer content. This relationship was nonsignificant ($r^2$ = .05 p = .47).

The relationship between the duration of specific visual cues and favorability of interview judgments based on visual information was hypothesized to be positive for gaze, smile, hand movement, parallel body orientation and physical attractiveness and negative for back/side lean. Judgements based on visual cues were significantly correlated with the duration of hand movement ($r^2$ = .18, p = .00) and the degree of physical attractiveness ($r^2$ = .28, p = .00). Nonsignificant correlations were found between judgements based on visual cues and gaze($r^2$ = -.03, p = .65), smile ($r^2$ = .13, p = .07), parallel body orientation ($r^2$ = .01, p = .85), back/side lean ($r^2$ = .05, p = .47). The relationship between favorability of interview judgments based on visual cues and the composite visual cue, attentive body orientation, was also tested. A nonsignificant correlation ($r^2$ = -.02, p = .78) was found. Coefficients of determination were calculated to represent the percentage of variance in judgments based on visual cues that can be explained by variance associated with exhibitions of visual cues. In this case, the coefficient of determination for the relationship between judgments based on visual cues and hand movement was $r^2$ =.03 and judgments based on visual cues and physical attractiveness was $r^2$ = .08. This indicates that 3 percent of the difference in favorability in interview judgments based on visual cues exhibited by an applicant can be explained by their difference in exhibition of this specific visual cue, hand movement. Likewise, 8 percent of the difference in favorability in interview judgments based on visual cues exhibited by an applicant can be explained by their difference in physical attractiveness. These results partially support hypothesis six.

Hypothesis seven suggests that specific visual cues are related to specific personality variables. Correlational analysis was used to test this hypothesis. Nonsignificant relationships were found between Agreeableness and hand movement ($r^2$ = .04, p = .62) and Agreeableness and smile ($r^2$ = .13, p=.07). Nonsignificant relationships were also found between Extroversion and gaze $r^2$ = -.04, p = .57), Extroversion and hand movement $r^2$ = .11, p=.13), Extroversion and smile $r^2$ = 11, p =.13) and Extroversion and physical attractiveness $r^2$ = .06, p = .42). Significant correlations were found between Conscientiousness and parallel body orientation $r^2$ = - .14, p = .05) and Conscientiousness and back/side lean $r^2$ =.16, p=.02). The relationship between Conscientiousness and the composite variable, Attentive Body Orientation, was also tested. A significant, negative relationship was found $r^2 = -.16$, $p = .03$). These relationships, however, were opposite the direction hypothesized and do not provide support for Hypothesis Seven.

Hypothesis Eight suggested the relationship between personality attributes and favorability of judgments based on visual cues was effected by the display of specific visual cues. Partial correlation analysis was used to test this hypothesis. The first relationship examined was between interviewees' agreeableness and the favorability of interview judgments while controlling for duration of hand movement and smile. The second-order partial correlation coefficient was nonsignificant $r^2 = .12$, $p = .09$). The second relationship considered was between interviewees' extroversion and the favorability of interview judgments based on visual cues while controlling for duration of gaze, hand movement and smile, and degree of physical attractiveness. The fourth-order partial correlation was nonsignificant $r^2 = .05$, $p = .49$). The final relationship investigated was between interviewees' conscientiousness and favorability of judgments based on visual cues while controlling for parallel body orientation and back/side lean. The second-order partial correlation was nonsignificant $r^2 = -.04$, $p = .61$). The relationship was also tested using the composite variable, attentive body orientation. The first-order partial correlation was also nonsignificant $r^2 = -.03$, $p = .68$).

# CHAPTER 5

# DISCUSSION

In his review of employment interview literature, Harris (1989) poses the question whether nonverbal behavior in the interview provides any valid information beyond that obtained from the verbal content. Subsequent research has shown a relationship between interview judgments based on nonverbal behavior and interview judgments based on verbal content (e.g., Burnett, 1993; Motowidlo & Burnett, 1995). This relationship was hypothesized to be the result of attributes of the individual being conveyed both through answer content and nonverbal behavior. This study attempts to offer an explanation for the relationship between interview judgments based on nonverbal behavior and interview judgments based on verbal content.

The four stage information processing model depicted by Motowidlo (1986) formed the conceptual basis for the study. The link between the true score domain of positive and negative applicant information and the input sample of observed or experienced information was expanded to include verbal and nonverbal channels through which applicant information can be conveyed. Hypotheses focused on the relationship between attributes of the applicant, specifically personality and intelligence, visual cues displayed, and the favorability of interview judgments based on visual cues or answer content. The personality and intelligence attributes were considered the most likely explanation for this relationship because they could both be linked to job performance and could be expected to be linked to answer content and/or visual cues.

This study found the proposed relationship between favorable judgments of managerial effectiveness based on visual cues and favorable judgments based on the content of applicant answers. A significant, positive relationship existed between favorability of judgments based on both types of information. Further analyzes attempted to explore why this relationship existed.

Hypothesis two, three and four considered the relationship between interview judgments based on visual cues and interview judgments based on answer content and job related personality attributes, specifically agreeableness, conscientiousness, and extroversion. Positive, significant relationships were found between agreeableness and both judgments based on visual cues and judgments based on answer content. A positive, significant relationship was also found between conscientiousness and judgments based on answer content. However, the coefficient of determination indicates that only 2 percent of the difference in judgments based on visual cues can be explained by differences in the personality attribute agreeableness, and only 2 percent of the difference in judgments based on answer content can be explained by differences in agreeableness or conscientiousness.

The fourth hypothesis further explored this relationship between interview judgments based on visual cues and interview judgments based on answer content and job related personality attributes. Controlling for the agreeableness, conscientiousness, and extroversion attributes of interviewees does not effect the relation between the favorability of judgments based on visual cues and the favorability of judgments based on answer content. This suggests that while certain job related personality attributes are related to favorability of interview judgments based on both answer content and visual cues, this relationship does not explain the relationship between judgments based on answer content and judgments based on visual cues.

The relationship between the intelligence of an interviewee and favorability of interview judgments was not supported. This may be because the interview does not provide the medium for accurate inference of intelligence. This corresponds with the suggestion by Gatewood and Field (1990) that the interview be used for the determination of limited individual attributes, specifically job knowledge, sociability and related interpersonal abilities, and corporate citizenship.

The next set of hypotheses explored the relationship between favorability of judgments based on visual cues and an interviewee's exhibition of specific visual cues. Favorability of interview judgments was positively related to the duration of hand movement and the degree of physical attractiveness. However, only 3 percent of the difference in favorability in interview judgments based on visual cues could be explained by their differing amounts of hand movement while, 8 percent of the variance could be explained by differences in physical attractiveness.

These relationships were further tested to determine if the visual cues displayed by individuals during an employment interview were related to job related personality attributes.  While significant relationships were found between the visual cues of parallel body orientation, back/side lean, and conscientiousness, these relationships were opposite the direction hypothesized and do not provide support for this hypothesis.

The last hypothesis considered that the relationship between personality attributes and favorability of judgments based on visual cues was effected by the display of specific visual cues.  Partial correlation analysis did not support this hypothesis.

Overall, the results indicate that it may be possible for the attributes of an individual to be conferred through both the verbal and visual channels in an interview setting. While the attribute of intelligence was found to be nonsignificant, relevant job related personality dimensions of the individual were found to be conveyed through both information channels.  This finding extends the understanding of the way in which interview information is conveyed and processed and suggests that the information processing model may be expanded to include the utilization of both verbal and nonverbal channels in conveying applicant information.

The use of both information channels in communicating applicant information may also provide an answer to the why a relationship exists between judgments based on visual information and judgments based on answer content. This relationship could be the result of individual attributes that are both related to the intended job performance and capable of being conveyed through multiple communication channels. This study focused on two specific individual differences that met these criteria, intelligence or cognitive ability and personality as measured by the "Big Five" dimensions. However, the domain of individual differences between applicants is virtually infinite. Other attributes may also be both related to job performance and exhibited through both channels. For example, Gellatly, Paunonen, Meyer, Jackson, and Goffin report that managers with an accommodating and helpful personality trait configuration performed better on administration and accounting practices and were rated higher on customer, client and public relations; while the individual with a self-reliant personality was rated more proficient in written and verbal communication, managing unit personnel and on overall managerial effectiveness. These aspects of personality are also capable of being displayed through both verbal and nonverbal channels (i.e., Leathers, 1976; Mehrabian, 1972).

Results from this study also suggest an answer to the question posed by Harris (1989) as to whether nonverbal behavior in the interview provides any valid information beyond that obtained from the verbal content. Motowidlo (1986) posited that accuracy of individual judgment to be dependent on the accuracy with which the information sample matches the true score domain of information. If both channels of behavioral expression, information content and visual cues accurately indicate elements of the true score domain of information, accuracy could be increased by attendance to both channels of information.

Thus, some visual cues may be legitimate sources of predictive validity for interviews.

However, while these visual cues may be a valid source of variance in interviewers' judgments, they have a minimal effect on the evaluative judgments made. The societal and political challenges in utilizing visual cues would probably overshadow any increase in predictive accuracy. And, while visual cues do convey elements of an applicant's personality, accepted written tests are available to more accurately measure these traits.

The most important implication of these research findings is that visual cues maybe used to convey some job related information. To continue the practice of training interviewers to ignore or discount the relevancy of these visual cues may cause them to eliminate important job related information that contributes to the whole message conveyed by the interviewee. Further research needs to focus on not only what information is conveyed through visual cues, but how interviewers perceive and interpret this information. This will lead to developing ways to utilize the information conveyed through visual channels and perhaps to training of interviewers to selectively attend to and utilize relevant visual cues. These cues could clarify or complement the information conveyed through interviewees' responses which could increase the accuracy of the subsequent evaluative judgments.

## Limitations and Future Research

This study only isolated six specific visual cues, five dynamic cues and one static cue. Interviewers and supervisors attend to and utilize many additional cues since they have access to a wealth of visual information in the nonverbal channel. Additional nonverbal cues or more molar ratings could be used in future research.

This study was also limited in that it only considered the conveyance of two individual differences from the true score domain of applicant information, personality and intelligence. As discussed above, this domain of information is infinite. These particular attributes were chosen because of their relationship to job performance and the expectation that they would be related to judgments based on answer content and visual cues. Additional studies need to investigate the relationship of other elements of this domain of applicant information shown to be related to both job performance and portrayed through visual cues.

An additional limitation is that this study focused on making evaluative judgments for only positions requiring general managerial effectiveness. Other types of jobs, such as those requiring more technical or physical skills, should be investigated to determine the relevancy of using information from the nonverbal channel for predicting job performance.

Finally, future research should be conducted using real interviewers. Although Bernstein, Hakel, and Harlan (1975) did not find important differences between interviewers' and college students' decision processes in an interview situation (other than greater leniency by students), the generalizability of these findings should be extended by the use of experienced interviewers. In a face to face interview, the interviewer has greater cognitive demands than the subjects in this study. To determine the effect and influence of attendance to information in the nonverbal channel on interviewers' information processing systems those additional demands should be taken into account.

## Conclusion

Pertinent job related information about an applicant may be conveyed through both verbal and visual channels. Interviewers attend to and utilize both channels of information in developing an input sample from which subsequent applicant information is recalled and evaluated. Recognizing that both channels have the ability to provide relevant information and providing interviewers with the opportunity to use the visual channel to clarify and complement the content of interview answers could lead to an increase in the accuracy of evaluative judgments.

# APPENDIX A

## LEADERSHIP

I'd like you to imagine that your supervisor has asked you to join an established task force to fill a vacancy left by another manager who recently resigned. You have an interest in the project they are working on and you agree to at least sit in on a meeting this afternoon. Thirty minutes into the meeting you feel that the program the task force is ready to implement is inadequate and will have may problems. What would you do?

## DRIVE

Picture yourself as a department manager working on an important report with two other managers who are from different departments. Your supervisor, who by the way is not the supervisor of the other two managers, offers to look over the report before you present it to senior management. You give her a draft to review. She returns it with many serious criticisms, all on areas of the report that the other managers prepared. What would you do?

## TEAMWORK

Imagine that your supervisor asks you to take a group project because the project leader was transferred. You find out that the project is behind schedule because the former project leader mishandled some early steps. As a result, it will be extremely difficult for the group to complete the project by the deadline in three weeks. What would you do?

## PLANNING AND ORGANIZING

Imagine that you are offered an opportunity to transfer to a position in another division of the company for which you work. This would be a lateral move, instead of a promotion, and you would also have to move to another city. How would you go about deciding whether or not the accept this transfer?

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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